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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/839,649	04/19/2001	Alastair Murchie	22620/1222	2120

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EXAMINER	
CHUNDURU, SURYAPRABHA	
ART UNIT	PAPER NUMBER
1637	

DATE MAILED: 11/19/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/839,649	Applicant(s) MURCHIE ET AL.	
	Examiner Suryaprabha Chunduru	Art Unit 1637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 August 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13 and 16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13 and 16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 12.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. Applicants' response to the office action and amendment (Paper No. 14) filed on August 19, 2002 has been entered.

2. The Information Disclosure Statement (Paper No. 12), filed on June 24, 2002, has been entered and considered.

New Grounds of Rejection

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 12-13 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Arenas et al. (WO 97/09342).

Arenas et al. teach a high-throughput assay for identifying a test compound (test ligand) that binds to a target RNA wherein Arenas et al. disclose that the method comprises (a) contacting said test compound to said target RNA in the presence of conformation specific nucleases (RNA-modifying enzymes) (see page 11, lines 27-31, page 12, lines 7-17, page 35, lines 1-8); (b) measuring or detecting the modification of said target and comparing the amount of modification relative to a control or standard and identifying whether said test compound binds to said target (see page 35, lines 9-15). Arenas et al. also teach that the method comprises addition of non-specific DNA or RNA as suicide substrate to minimize the effect of nucleic acid-reactive molecules, such as intercalating agents, which have inhibitory activity (see page 11,

lines 11-26). Arenas et al. further teaches that (i) target RNA comprises ribosomal RNA (see page 23, lines 1-15); (ii) target includes a native or alternate conformation (see page 9, lines 10-15, and 19-25); chemical modification enhances the stability (more folded structure) of the target RNA (see page 11, lines 27-33, page12, lines 1-6); the test compound includes agents such as metals, peptides, proteins, lipids, polysaccharides, small organic molecules, nucleotides (see page 8, lines 6-15); test compound could be selected from large libraries (combinatorial library) of synthetic or natural compounds (see page 8, lines 16-31); and the method comprises a high-throughput format (see page 35, lines 1-15).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arenas

et al. (WO 97/09342) in view of Cundliffe et al. (Nature, Vol.278, No. 5707, pp 859-861, 1979).

Arenas et al. teach a high-throughput assay for identifying a test compound (test ligand) that binds to a target RNA wherein Arenas et al. disclose that the method comprises (a) contacting said test compound to said target RNA in the presence of conformation specific nucleases (RNA-modifying enzymes) (see page 11, lines 27-31, page 12, lines 7-17, page 35, lines 1-8); (b) measuring or detecting the modification of said target and comparing the amount of modification relative to a control or standard and identifying whether said test compound binds to said target (see page 35, lines 9-15). Arenas et al. further teaches that (i) target RNA comprises ribosomal RNA (see page 23, lines 1-15); (ii) target includes a native or alternate conformation (see page 9, lines 10-15, and 19-25); chemical modification enhances the stability (more folded structure) of the target RNA (see page 11, lines 27-33, page12, lines 1-6); the test compound includes agents such as metals, peptides, proteins, lipids, polysaccharides, small organic molecules, nucleotides (see page 8, lines 6-15); test compound could be selected from large libraries (combinatorial library) of synthetic or natural compounds (see page 8, lines 16-31); and the method comprises a high-throughput format (see page 35, lines 1-15). However, Arenas et al. did not teach a RNA-modifying enzyme as methylases.

Cundliffe et al. teach a method for ribose methylation and resistance to a test compound, thiostrepton, wherein Cundliffe et al. disclose that RNA-ribose methylase incorporates a single methyl –group in thiosterpton-resistant ribosomes (see page 859, column1, paragraphs 1-2). Cundliffe et al. also teach that (i) RNA- modifying enzyme as RNA ribose methylase (see page 859, column1, paragraphs 1) (ii) incorporation could be detected by the incorporation of an isotopic label from S-adenosyl-methionine into the target RNA (see page 859, column 1,

paragraph 2); presence of nucleotides (purine or pyridine bases) inhibited or not adsorbed the incorporation of methyl groups in to the target RNA (see page 859, column 1, paragraph 2 and Fig.1) and binding of thiostrepton to the target (see page 860, column 1, paragraph 1, and Fig.2); and erythromycin induced methylase (see page 861, column 1, lines 1-18).

Therefore, it would have been prima facie obvious to a person of ordinary skill in the art at the time the invention was made, to combine a method of screening for a test compound that binds to a target RNA as taught by Arenas et al. with the methylases (RNA-modifying enzyme) as taught by Cundliffe et al. to achieve expected advantage of developing a sensitive and high-throughput method for screening test compounds that bind specifically to target RNA because Cundliffe et al. suggests that "the ribose-methylation is a novel mechanism of resistance to antibiotic and the antibiotic resistance is known to involve changes in the pattern of post transcriptional modification of ribosomal RNA"(see page 860, column 2, paragraph 1). An ordinary practitioner would have been motivated to combine the method of Arenas et al. with the methylase (RNA-modifying enzyme) of Cundliffe et al. to eliminate test compounds which show antibiotic resistance and enhance binding of those test compounds which do not show resistance because it is known from the teachings of Cundliffe et al. that RNA-modifying enzyme could eliminate possible drug resistant test compounds and enhance specific binding of a test compound of interest to the RNA target.

Response to Arguments

4. Applicant's response to the office action (Paper No.14) is fully considered and deemed persuasive.

5. The objection made in the previous office action with reference to the specification is withdrawn in view of the amendment (Paper No.14).

6. The rejection made under 35 U.S.C. 112 second paragraph in the previous office action is withdrawn herein in view of the applicants' amendment (Paper No.14).

7. With respect to the rejection made in the previous office action under 35 U.S.C. 103(a), Applicant's arguments (Paper No. 14) with respect to claims 1-13 and 16 is considered but are moot in view of the new ground(s) of rejection.

Conclusion

No claims are allowable.

Applicant's submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on June 24, 2002 prompted the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 609(B)(2)(i). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suryaprabha Chunduru whose telephone number is 703-305-1004. The examiner can normally be reached on 8.30A.M. - 4.30P.M, Mon - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on 703-308-1119. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3014 for regular communications and - for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Suryaprabha Chunduru
AU 1637
November 14, 2002.

JEFFREY FREDMAN
PRIMARY EXAMINER